Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Please amend claims 1, 2, 11-13, 18-20, and 22 and add claims 25-28 as follows:

1. (currently amended): A receiver front end for use in a communications system that employs digitally modulated signals operating in an upstream band of frequencies that is divided into two or more non-overlapping upstream channels, each upstream channel ~~flexibly~~ centered on a selected ~~frequencies~~ frequency within the upstream band of frequencies, wherein the selected frequencies are determined to avoid interference, ~~so long as the channels are non-overlapping, with each channel occupying no more than a predetermined maximum frequency band,~~ the receiver front end comprising[[;]]:

a down-converter configured to accept a data stream comprising samples of the ~~entire~~ upstream band of frequencies sampled at a rate of at least twice the frequency of the highest selected frequency in the band and utilizing the selected frequencies to convert ~~a~~ each of the two or more non-overlapping ~~channel~~ channels within the upstream band of frequencies to baseband, the down-converter shifting the said non-overlapping ~~channel~~ channels to a common baseline center frequency ~~that is the same baseline center frequency for each channel~~ and producing a down-converted output signal for each of the said non-overlapping channels; and

a decimator configured to decimate ~~a~~ the down-converted ~~signal~~ output signals received from the down-converter.

2. (currently amended): The receiver front end of claim 1 ~~further comprising~~wherein the down-converter comprises a plurality of down-converters selectively configured to down convert to baseband channel signals the two or more non-overlapping upstream channels ~~flexibly~~ centered on the selected frequencies within the upstream band of frequencies in parallel.

3. (previously presented): The receiver front end of claim 2 further comprising a plurality of decimators, each decimator associated with a corresponding down converter, each decimator configured to receive one of the baseband channel signals from a corresponding one of the down-converters and to decimate the received baseband channel signal to a digital data stream having two samples for each symbol period of the received baseband channel signal.

4. (previously presented): The receiver front end of claim 1 wherein the communications system is a data over cable service interface specifications (DOCSIS) compatible communications system.

5. (previously presented): The receiver front end of claim 1 wherein the receiver front end is configured to down-convert and decimate a DOCSIS data stream comprising digitally modulated signals that fall within non-overlapping upstream channels that are assigned within a 5 to 42 MHz band.

6. (previously presented): The receiver front end of claim 1 wherein the receiver front end is configured to down-convert and decimate a data stream in which non-overlapping channels are assigned bandwidths of approximately 3.2MHz, 1.6 MHz, .8 MHz, .4MHz, or .2 MHz.

7. (previously presented): The receiver front end of claim 1 further comprising a plurality of down-converters arranged in a tree-structure to iteratively convert to baseband successively smaller portions of the upstream band of frequencies.

8. (previously presented): The receiver front end of claim 7 wherein the down-converters are configured to iteratively convert to baseband smaller portions of the upstream band of frequencies until each channel within the band is converted to baseband.

9. (previously presented): The receiver front end of claim 8 further comprising decimators configured to decimate the successively smaller portions of the upstream band of frequencies.

10. (original): The receiver front end of claim 9 wherein the decimators are configured to decimate each baseband channel to a sample rate that is twice the symbol rate of the baseband channel.

11. (currently amended): The receiver front end of claim 1 further comprising an analog to digital converter (ADC) configured to receive the upstream band of frequencies as an analog signal, to sample the ~~entire~~ upstream band of frequencies at greater than twice highest frequency of the band and to provide the sampled data to the down-converter.

12. (currently amended): A method for down-converting and decimating digitally modulated signals operating in an upstream band of frequencies that is divided into two or more non-overlapping upstream channel signals, each of the upstream channel signals ~~flexibly~~ centered on a selected ~~frequencies~~ frequency within the upstream band of frequencies, wherein the

selected frequencies are determined to avoid interference, ~~so long as the channels are non-overlapping, with each channel occupying no more than a predetermined maximum frequency band,~~ the method comprising the steps of[[;]]:

(A) accepting in a down-converter a data stream comprising samples of the ~~entire~~ upstream band of frequencies sampled at a rate of at least twice the frequency of the highest selected frequency in the upstream band;

(B) converting in the down-converter each of the two or more non-overlapping upstream channel signals within the upstream band of frequencies to baseband channel signals utilizing the selected frequencies whereby each of the non-overlapping upstream channel signals is shifted to a same center frequency; and

(C) decimating in a decimator the baseband channel signals received from the down-converter.

13. (currently amended): The method of claim 12 wherein the step (B) of converting further comprises the step of:

(B1) down-converting to baseband the two or more non-overlapping upstream channel signals within the upstream band of frequencies in a plurality of down-converters in parallel.

14. (previously presented): The method of claim 12 wherein the step (C) of decimating further comprising the step of:

(C1) receiving in a decimator one of the baseband channel signals from a corresponding one of the down-converters, decimating the received baseband channel signal to a digital data stream having two samples for each symbol period of the received baseband channel.

15. (previously presented): The method of claim 12 wherein the data stream is a DOCSIS compatible data stream.

16. (previously presented): The method of claim 12 wherein the data stream is a DOCSIS data stream comprising digitally modulated signals that fall within non-overlapping upstream channels that are assigned within a 5 to 42 MHz band.

17. (previously presented): The receiver front end of claim 12 wherein the data stream is a data stream in which non-overlapping channels are assigned bandwidths of approximately 3.2MHz, 1.6 MHz, .8 MHz, .4 MHz, or .2 MHz.

18. (currently amended): The method of claim 12 wherein the step (B) of converting further comprises the step of:

(B2) converting iteratively the two or more non-overlapping channel signals within the upstream band in a plurality of down-converters arranged in a tree-structure to successively smaller portions of the upstream band of frequencies.

19. (currently amended): The method of claim 18 wherein the step (B2) further comprises the ~~steps~~ step of:

(B3) converting iteratively to the smaller portions of the upstream band of frequencies until each channel within the band is converted to baseband whereby each of the two or more non-overlapping channel signals is shifted to a same center frequency.

20. (currently amended): The method of claim 12 further comprising the step of:

(C2) decimating in decimators successively smaller ~~portion~~ portions of the upstream band of frequencies.

21. (previously presented): The method of claim 12 further comprising the step of:

(C3) decimating in decimators each of the baseband channel signals to an ample rate that is twice the symbol rate of each of the baseband channel signals being decimated.

22. (currently amended): The method of claim 13 further comprising the step of:

(D) receiving the upstream band of frequencies as an analog signal in one or more analog to digital converters (ADCs) , the number of ADCs being fewer than the number of channels in the upstream band of frequencies,

(E) sampling the ~~entire~~ upstream band of frequencies in the ADCs at greater than twice highest frequency of the band; and

(F) providing the sampled ~~data~~ analog signal to the down-converters by the one or more ADCs.

23. (previously presented): The receiver front end of claim 1 wherein the baseline center frequency is zero Hz.

24. (previously presented): The method of claim 12 wherein the same center frequency is zero Hz.

25. (new): A receiver system that receives digitally modulated signals operating in an upstream band of frequencies divided into two or more non-overlapping upstream channels, each upstream channel centered on a selected frequency within the upstream band of frequencies, wherein the selected frequencies are determined to avoid interference, the receiver system comprising:

an analog to digital converter (ADC) receiving the digitally modulated signals and converting the digitally modulated signals into a data stream comprising samples of the upstream band of frequencies sampled at a rate of at least twice the frequency of the highest selected frequency in the band; and

a receiver front end comprising:

a down-converter configured to accept the data stream and utilizing the selected frequencies to convert each of the two or more non-overlapping channels within the upstream band of frequencies to baseband, the down-converter shifting the said non-overlapping channels to a common baseline center frequency and producing a down-converted output signal for each of the said non-overlapping channels; and

a decimator configured to decimate the down-converted output signals received from the down-converter and produce an output data stream.

26. (new): A headend communication system comprising:

a plurality of mini-headends communicating with a headend, each mini-headend receiving a plurality of transmitted signals merged as digitally modulated signals in an upstream band of frequencies divided into two or more non-overlapping upstream channels, each upstream channel centered on a selected frequency within the upstream band of frequencies, wherein the selected frequencies are determined to avoid interference, at least one mini-headend comprising:

an analog to digital converter (ADC) receiving the digitally modulated signals and converting the digitally modulated signals into a data stream comprising samples of the upstream band of frequencies sampled at a rate of at least twice the frequency of the highest selected frequency in the band; and

a receiver front end comprising:

a down-converter configured to accept the data stream and utilizing the selected frequencies to convert each of the two or more non-overlapping channels within the upstream band of frequencies to baseband, the down-converter shifting the said non-overlapping channels to a common baseline center frequency and producing a down-converted output signal for each of the said non-overlapping channels; and

a decimator configured to decimate the down-converted output signals received from the down-converter and produce an output data stream, wherein further processing phase corrects, time corrects, and equalizes the output data stream for all constituent channels.

27. (new): The headend communication system of claim 26 wherein the communicating with a headend is over an optical fiber.

28. (new): The headend communication system of claim 26 is part of a cable television system and wherein the plurality of transmitted signals are from subscribers of the cable television system.